

State of Washington
Department of Labor and Industries

**Review of the Department of Labor and Industries'
Vocational Provider Performance Measurement System**



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Dr. Thomas Wickizer is a Professor in the Department of Health Services at the University of Washington. In 1997, he was awarded the Rohm and Haas Distinguished Professorship for five years. He is a nationally renowned healthcare economist and researcher. With an educational background in public health (Ph.D., M.P.H.), social work (M.S.W.) and economics (M.A.), he brings a unique and valuable perspective to public healthcare policy analysis and discussions. Recently, Dr. Wickizer has completed, and is conducting, major state- and national-level research in occupational health, healthcare economics, workers' compensation, long term disability, managed care and utilization review. Dr. Wickizer is widely published in significant healthcare journals and is a frequent speaker and presenter for public health professionals.

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EXECUTIVE SUMMARY

Introduction

Washington State statute and administrative code require the Department of Labor and Industries (L&I) to assess the performance of vocational rehabilitation counselors and to make referrals based upon demonstrated performance. Factors that are to be considered in assessing performance include: (1) cost of services, (2) length of time taken to provide services, (3) outcome of the vocational services, and (4) complexity of cases. In 1997, L&I began work to design a system to measure vocational provider performance, and completed the initial system in 1998. The vocational provider community has voiced continuing concerns about the performance measurement system. In an effort to address these concerns, L&I has had ongoing discussions with various stakeholder groups, commissioned William Mercer Inc. to conduct a formal in-depth review of the system, and modified the system from time to time in order to improve its functioning. In August 2003, Health System Analysis requested that Thomas Wickizer, Ph.D., Professor of Health Services at the University of Washington, conduct a further review of the performance measurement system. This report presents the findings of this review, including recommendations for further system modification.

Methodology

This review used data from three different sources: (1) in-person interviews with selected L&I staff who were knowledgeable about the design and operation of the performance measurement system; (2) written and web-based material pertaining to the measurement system, including Provider Bulletins and Updates, the Mercer Report, the 1998 Joint Legislative Audit and Review Committee (JLARC) Report, and the Vocational Provider Performance Report (from L&I's web site); and (3) quantitative data on 29,794 closed referrals covering the period October 2001 through March 2003. Much of the review activity focused on analyzing data included in the referral database. Both descriptive and multivariate statistical methods were used for this purpose. Specific components of the performance measurement system examined included:

- Measurement of duration time and costs
- Outcomes and referrals
- Outcome weighting
- Complexity adjustment
- Approach for certifying vocational providers through calculating the Standard Error of Mean (SEM)
- Provider performance report

Results

The 29,794 vocational referrals closed between October 2001 and March 2003 represented \$173.3 million in expenditures, including direct vocational costs (\$45.7 million, 26%) and duration (time loss) costs (127.6 million, 74%).* These referrals involved 18,296 individual claimants who received vocational services from 556 different providers. The distribution of referrals and costs was as follows:

- Early Intervention (EI) services—12,068 referrals, \$50.9 million (29%)
- Ability to Work Assessment (AWA) services—11,708 referrals, \$67.7 million (39%)
- Plan Development (PD) services—4,343 referrals, \$38.2 million (22%)
- Plan Implementation (PI) services—1,675 referrals, \$16.5 million (10%)

Overall, 12% of the referrals had a successful return to work (RTW) outcome, and 20% had an able to work (ATW) outcome. Providers differed substantially in their RTW rates and resource use. The average cost per RTW outcome was \$65,467; the corresponding value for ATW outcomes was \$48,479. Among providers with at least 5 RTW outcomes (n = 256), the cost per RTW varied from \$5,672 to \$142,133. Twenty-five of the 256 providers achieved RTW outcomes at an average cost of under \$23,000. In contrast, ten providers had costs per RTW outcome of over \$90,000.

The review examined different components of the Complexity-Adjusted Cost Outcome (CACO) formula. This formula is used to generate CACO scores for each provider that indicate performance. These scores are summarized in a Provider Performance Report, are posted to the L&I website, and are used by claim managers for purposes of making referrals. Currently, the performance system uses a statistical method known as the Standard Error of the Mean (SEM) to compare providers' CACO scores with the statewide average CACO score. Providers with CACO scores falling within a statistical limit of the statewide average are certified as eligible to receive referrals. Providers with CACO scores above this limit are designated as conditional, but may still receive referral if claimants' needs and circumstances dictate. The following findings emerged from the analyses performed for this review:

- Although the complexity factors are equally weighted in the CACO formula, they appear to have differential effects on duration and vocational costs.
- Given the current emphasis on return to work, RTW is probably underweighted in the current CACO formula.
- The conversion factor used to transform duration days to expenses does not reflect actual resource use incurred by L&I in making time loss payments.
- The current SEM formula, on infrequent occasion, produces seemingly anomalous results that may be influenced by the volume of referrals.
- The performance measurement system could be enhanced by incorporating other outcomes beside RTW, such as ATW or plan approval, in the CACO formula.

* Throughout this report, time loss costs are based upon the average daily time loss rate for 1997 (\$43.20).

- The performance measurement system appears to be underutilized as a tool to (1) manage vocational rehabilitation referrals, and (2) perform continuous quality improvement activities aimed at upgrading provider skills.

Conclusions and Recommendations

L&I's vocational provider performance measurement system is conceptually sound and well designed. Its utility as a tool to improve the management of vocational referrals and to perform quality improvement activities is not being exploited to the fullest. The following recommendations (in order of priority) for improving the functioning of the performance system emerged from this review:

1. Ensure that vocational referrals are more closely aligned with demonstrated provider performance, based upon rankings of CACO scores.
2. Increase the weight of RTW outcome in the CACO calculation.
3. Incorporate other desirable outcomes (weighted appropriately) in the CACO calculation.
4. Increase the weight of the CACO conversion factor.
5. Modify the case complexity adjustment procedure to more accurately reflect the effects of different complexity factors.
6. Use CACO data for continuous quality improvement activities to enhance the skills of vocational providers.
7. Modify the SEM to correct weaknesses in the method used to adjust for provider volume and to improve its functioning.

INTRODUCTION

Washington Administrative Code (WAC 296-19A-280 and WAC 296-19A-290) requires the Department of Labor and Industries (L&I) to evaluate the performance of vocational rehabilitation providers and to make referrals to providers based upon performance ratings. The administrative code stipulates factors to be measured to assess provider performance, including: (1) cost of services, (2) length of time taken to provide services, (3) outcome of the vocational services, and (4) complexity of cases. In 1997, L&I began work to design a system to measure vocational provider performance. The initial system was completed in 1998.

The vocational provider community reacted with skepticism and resistance at the prospect of having its performance systematically monitored and of having provider referrals made on the basis of formal explicit criteria. Over the past several years, L&I has attempted to address concerns and questions of both internal and external stakeholder groups regarding its efforts to establish a capacity to measure vocational provider performance consistent with state law and regulations. In 1999, L&I contracted with William Mercer Inc. to conduct a comprehensive review of its system for purchasing vocational rehabilitation services, including its performance measurement system. A number of recommendations suggested in the report were adopted by L&I. Despite L&I's efforts to address concerns and improve its vocational performance measurement system, questions and criticism have continued.

To better understand the strengths and weaknesses of the vocational provider performance measurement system, and to identify further refinements that might improve it, Health Services Analysis at L&I requested that Dr. Thomas Wickizer, Professor in the Department of Health Services at the University of Washington, conduct a review of the vocational provider performance measurement system. This report presents the findings of this review and outlines recommendations for modifying the performance measurement system to improve its utility. A major component of this review was a detailed analysis of data on approximately 29,000 closed vocational referrals that occurred between October 2001 and March 2003.

Project Goals

The goals of this review were as follows.

1. To assess the Vocational Provider Performance Measurement system's ability to:
 - identify the effectiveness and efficiency of vocational rehabilitation providers in delivering vocational services, and
 - summarize and report information regarding provider performance.
2. Where appropriate, make recommendations for enhancing the system to better fulfill its aims.

The report is organized in several sections. The section that follows highlights the methodology used for the review and analysis. After that section, the results of the review are presented starting with descriptive data on vocational costs and other indicators of interest.

The report concludes with a brief section outlining recommendations for improving the performance measurement system.

L&I's effort to establish a performance measurement system for vocational services should be understood in a broader context. Over the past several years, there has been a growing movement among health care purchasers to improve provider accountability. In the general health care arena, the notion of measuring performance, and linking provider payment to it, is widely accepted as a desirable goal. The Robert Wood Johnson Foundation currently has an ongoing national demonstration to test the feasibility of measuring physician performance and linking performance to reimbursement. Despite the challenges it has encountered, L&I's effort to develop a performance measurement system clearly puts it in the forefront of the larger national movement to improve accountability in the purchasing of health and rehabilitation services.

METHODOLOGY

This review project used data from three different sources: (1) in-person interviews with selected L&I staff who were knowledgeable about the design and operation of the performance measurement system; (2) written and web-based material pertaining to the measurement system, including Provider Bulletins and Updates, the Mercer Report, the 1998 JLARC Report, and the Vocational Provider Performance Report (from L&I's web site); and (3) quantitative data on 29,794 closed referrals covering the period October 2001 through March 2003.

The referral database included the following information:

- Referral type
- Direct vocational cost
- Duration
- Calculated duration cost
- Claimant age and sex
- Service location
- Complexity-Adjusted Cost/Outcome (CACO)
- Statewide average and standard deviation for cost and duration
- Complexity factors

As outlined in the project's scope of work, the review was to examine the following components of the measurement system:

- Time and costs
- Outcomes and referrals
- Outcome weighting
- Complexity adjustment
- Approach for certifying vocational providers through calculating the Standard Error of Mean (SEM)
- Provider performance report

Although the project used information from all three of the data sources described above, most of its work was directed at analyzing the referral database. This work included a series of descriptive analysis of data for costs and other indicators, as well as multivariate statistical analysis. The latter analysis was conducted to evaluate the complexity factors and to assess whether differential weighting of these factors might be appropriate instead of the current approach of using equal weights.

Performance Measurement System Criteria

In order to assess the performance measurement system, it was necessary to develop criteria against which the design and operation of the system, and recommendations for change, could be evaluated. The objective was not to develop detailed criteria that would be used in a formal sense to evaluate the system, but rather to develop more general criteria that could be used heuristically to guide the review, assess strengths and weaknesses of the system, and consider options for possible changes. The following criteria were formulated for this purpose:

- System design should reflect agency's values, priorities and goals.
- System should generate information that captures important dimensions of performance.
- System should, on average, produce "performance scores" that are valid and reliable.
- System design/operation should, to extent possible, exhibit administrative simplicity and transparency.
- System design should support continuous quality improvement objectives of agency.

RESULTS

Descriptive Data on Costs and Other Indicators

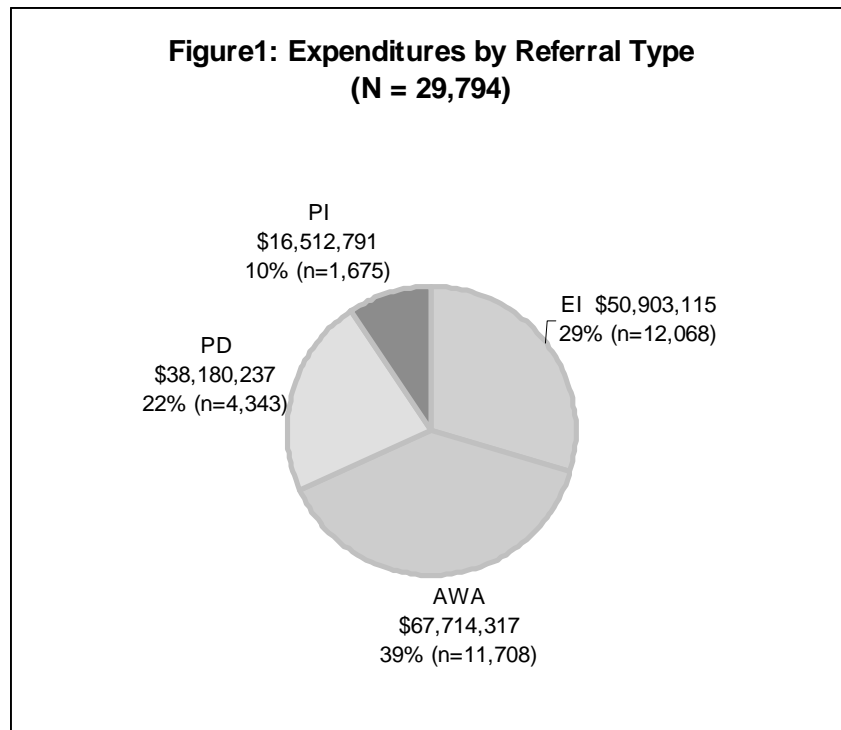
One of the tasks performed for this review was to analyze the referral database in order to describe the nature and level of vocational costs and to assess patterns of other indicators. This analysis addressed the following types of questions:

- What types of referrals account for most of the resources used to provide vocational services?
- Do return to work (RTW) or able to work (ATW) rates differ by referral type?
- How often is the fee cap hit?
- What proportion of total vocational costs are accounted for by "high cost" cases?

Direct Vocational Costs and Duration Costs: Shown in the Figure 1 below is the distribution of vocational costs (direct costs plus time loss costs*) for the 29,794 referrals closed from October 2001 through March 2003. The total cost of these referrals was \$173.3 million, with \$45.7 million (26%) expended for direct vocational costs and \$127.6 million

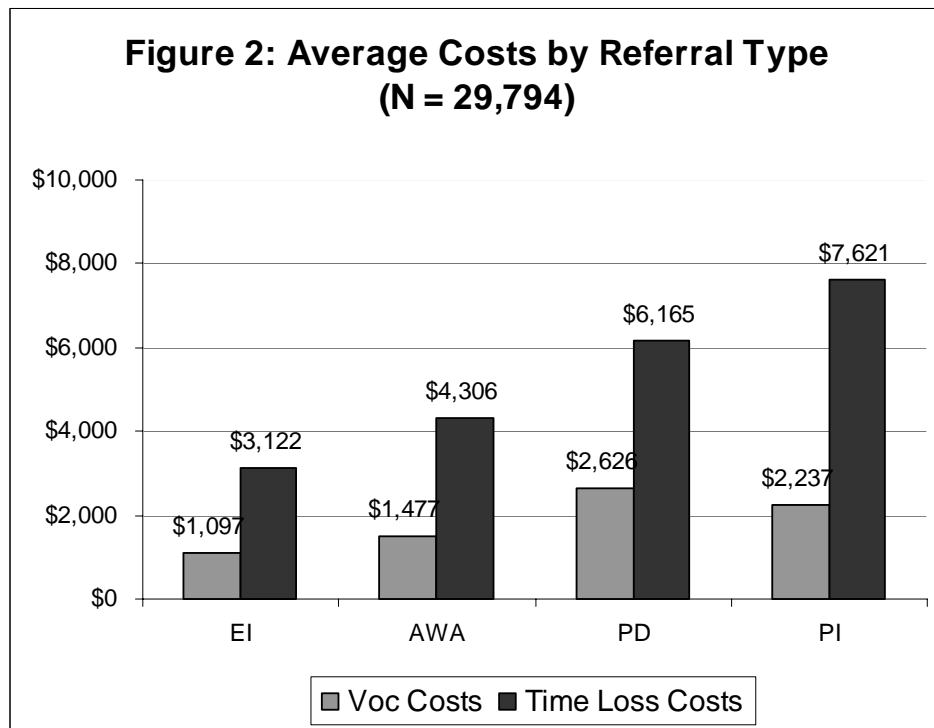
* Time loss costs are based upon the average daily time loss rate for 1997.

(74%) incurred for duration costs, based on a conversion factor of \$43.20 per day. Ability to work assessment (AWA) accounted for the greatest proportion (\$67.7 million, 39%) of costs, followed by early intervention (EI) (\$50.9 million, 29%). These two vocational services alone accounted for 68% of the \$173.3 million. Plan development (PD) services accounted for 22% of the costs, with plan implementation (PI) accounting for the remaining 10%. The distribution of costs shown in Figure 1 reflects the relative number of referrals across the four services. EI and AWA services had approximately 12,000 referrals, while PD and PI services had 4,343 and 1,675, respectively.



Note: The expenditures shown in Figure 1 include duration costs, which are based upon the 1997 average daily time loss rate.

Shown in Figure 2 are average costs, which provide additional information about resource consumption for different vocational services. As Figure 2 indicates, referral duration has a substantial impact on average costs. For every referral type, duration costs are two to four times greater than direct vocational costs. For example, for EI services direct average vocational costs are \$1,097. In contrast, average duration costs are \$3,122, based upon the currently used conversion factor of \$43.20 per day. Average direct vocational costs are highest for PD services, while duration costs are highest for PI services. Taken together, Figures 1 and 2 clearly indicate the importance of managing referral duration or the time it takes to complete vocational services. For example, AWA services are the most costly services, accounting for 39% of total costs (Figure 1). The reason AWA services are so costly is the combination of high average duration costs (Figure 2) and the high number of referrals for these services (Figure 1). Controlling vocational costs requires duration time to be managed effectively.



Note: Duration costs shown in Figure 2 are based upon the 1997 average daily time loss rate.

Other Measures: In addition to costs, the review examined other measures, including return to work, able to work, duration of referral, and percentage of referrals hitting the fee cap (Table 1). The average referral had a duration of 99.2 days, based upon the lapsed time from when the referral was made until when it was closed. (Note: many claimants had multiple referrals, so the average length of time claims were open was often much longer.) The longest average duration was for PI services (176.4 days), followed by PD services (142.7 days). On average, AWA referrals required 99.7 days to complete. RTW and ATW rates also varied by type of referral. Twenty percent of EI referrals had a RTW outcome and 13% had an ATW outcome. Forty-one percent of PI referrals had an ATW outcome. Overall, 12% of the referrals had a RTW outcome. Referrals hit the fee cap relatively infrequently—2% of the time overall.

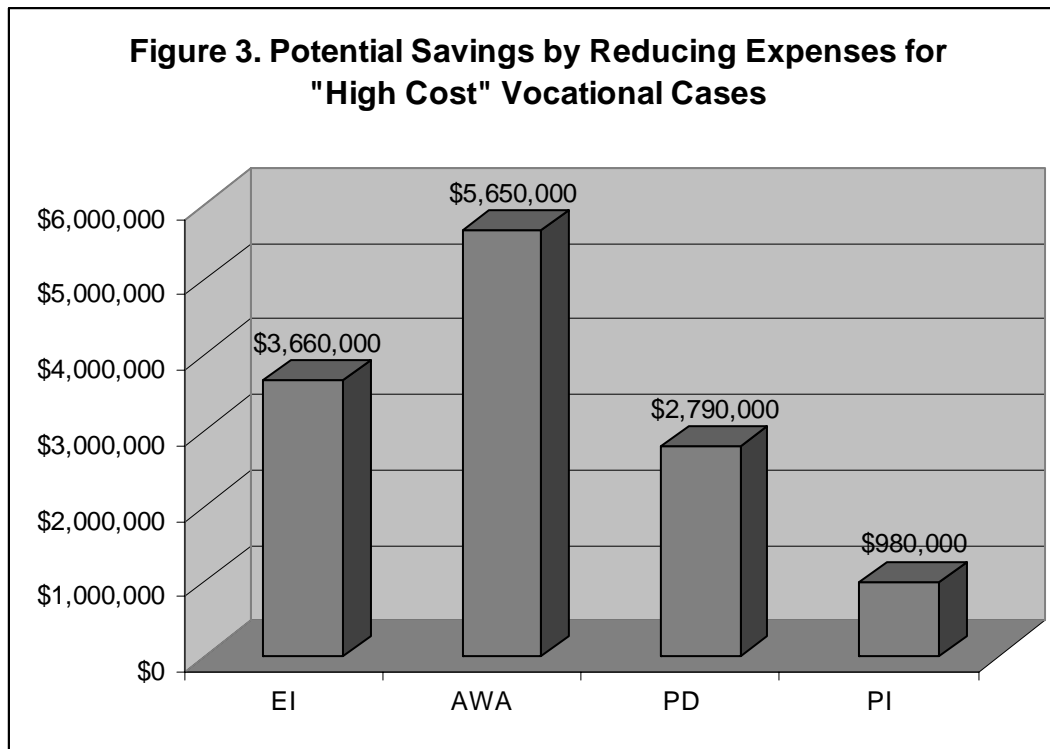
Table 1: Descriptive Information for Other Measures (N = 29,794)

Referral Type	Duration (Days)	RTW Rate	ATW Rate	% Hitting Fee Cap
Early Intervention (n=12,066)	72.3	20%	13%	3%
Ability to Work Assessment (n=11,708)	99.7	8%	30%	1%
Plan Development (n=4,343)	142.7	2%	3%	1%
Plan Implementation (n=1,675)	176.4	6%	41%	1%
All referrals (n=29,794)	99.2	12%	20%	2%

Potential Savings Related to High Cost Cases: One of the questions the review addressed through this descriptive analysis was the potential savings that could be gained by reducing expenses for high cost cases. Vocational services, like other health services, have the characteristic that a small percentage of cases account for a large proportion of total expenses. These high cost cases, if better managed, could generate significant potential efficiencies for the system. This analysis involved several steps: First, cases in the top 10% of the distribution for each referral type were defined as “high cost.” Second, the expense level for the 80th percentile of the cost distribution was identified for each referral type. Third, the difference between the actual expense and the designated expense representing the 80th percentile for each high cost case was calculated. This difference represented the potential savings that could be gained by reducing expenses of high cost cases to these designated levels. Note this is a conservative analysis in the way it calculated potential cost savings. The requirement was not to reduce the expenses of high cost cases to the overall median (50 percentile) value, but rather to reduce them more modestly to the 80th percentile value. The results are shown in Figure 3.

The greatest cost impacts would accrue for AWA services (\$5.65 million), followed by EI services (\$3.66 million). The estimated potential total savings would equal \$13.08 million, or 7.5% of the \$173.3 million expended for vocational services, including duration costs. This analysis treats each of the four referral types separately. As a further analysis, the 29,794 referrals were aggregated to the claim level (n = 18,396) and the steps described above were repeated to obtain a “claim level” estimate of cost savings for those claims in the top 10% of the cost distribution. Because costly claims had multiple referrals (median number of referrals equals 3), the cost distribution was even more skewed than the distributions used for the analysis presented in Figure 3. Vocational expenses (direct vocational and duration costs) for the “high-cost claims” ranged from \$19,337 to \$40,029. Estimated cost savings that

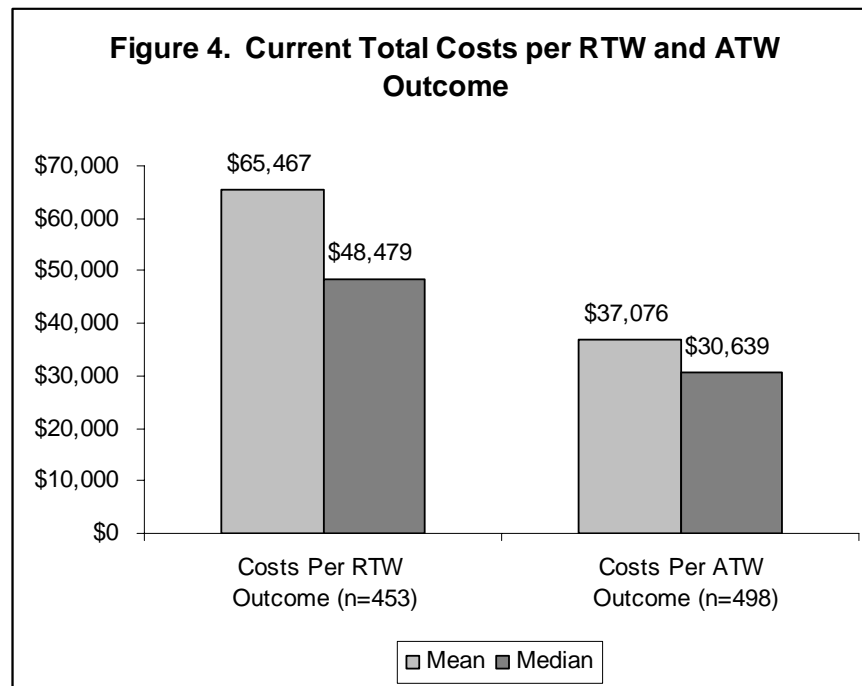
would accrue by reducing these expenses, as described previously, would be \$17.47 million. These analyses suggest there may be substantial cost savings, on the order of \$13 million to \$18 million, in developing strategies to better manage high-cost vocational cases.



Cost per RTW and ATW Outcome: Finally, the review examined costs in relation to outcomes. This was done by aggregating the data to the provider level and then examining the cost per RTW outcome and ATW outcome. The advantage of this analysis is that it combines costs and outcomes in one measure. For example, consider a provider with 20 referrals during a reporting period accounting for \$60,000 (direct vocational costs plus duration costs). If 3 of these referrals result in RTW outcomes, the cost per RTW outcome would be \$20,000 ($\$60,000 \div 3$). Figure 4 presents the means and medians for the total costs per RTW and ATW outcomes. The data shown in Figure 4 are based upon providers who had at least one RTW ($n = 453$) or ATW ($n = 498$) outcome during the period covered by the analysis. For these providers, the mean cost per RTW was \$65,467. Costs per ATW outcome were lower because providers achieved this outcome more frequently (see Table 1).

Not shown in Figure 4 is the substantial range in costs per outcome among vocational providers. Among providers with at least 5 RTW outcomes ($n = 256$), cost per RTW ranged from \$5,672 to \$142,133. Twenty-five of these providers had cost per RTW greater than \$75,000 and 10 had costs greater than \$90,000. In contrast, the twenty-five least costly providers had cost per RTW under \$23,000. It is unclear what accounts for the substantial variation in cost per RTW among different providers. Some of the difference may be

attributable to differences in claimant severity, or the mix of referrals (recall that the average cost differs among different types of referrals, see Figure 2). Nonetheless, the variation in costs raises questions about how different providers deliver vocational services, and underscores the importance of measuring provider performance.



Note: The cost figures shown in Figure 4 are based upon professional fees and duration costs, which were calculated using the 1997 average daily time loss rate.

Review of Methods Used to Calculate the Complexity-Adjusted Cost Outcome (CACO)

L&I's performance measuring system generates information in the form of complexity-adjusted cost/outcome (CACO) scores. Each closed referral generates a CACO score. CACO scores are then averaged for each provider during a defined reporting period. Using these averaged scores, the performance measurement system compares each provider with the statewide CACO average, based upon a statistical calculation known as the Standard Error of the Mean (SEM). Providers with CACO scores falling within a defined range, based upon the statistical method, become eligible to receive referrals. Providers with CACO scores above the limit receive conditional ratings, but may still receive referrals depending upon the specific needs of a client. Information regarding providers' CACO scores and other outcomes is summarized by service location in the Provider Performance Report, which is posted to the L&I web site and used by claim managers to make referrals.

This review examined the performance measurement system in terms of the following: (1) the CACO formula, (2) the procedure for designating provider eligibility through the SEM, and (3) the Provider Performance Report. The CACO formula is shown below:

$$\left\{ \frac{(\text{vocational costs} - \text{cost adjustment}) + [(\text{duration} - \text{duration adjustment}) * (\text{Conversion Factor})]}{1.5 \text{ for RTW outcome or } 1.0 \text{ for other outcomes, or } .75 \text{ for fee cap outcome}} \right\} \times .001$$

Note that the numerator represents costs (direct vocational costs plus duration costs) and allows for adjustment of these costs to account for complexity. Duration time in days is converted to costs through the conversion factor shown in the above formula. The conversion factor is currently set equal to \$43.20, the value of the average daily time loss payment in 1997. The formula allows for direct vocational costs or duration time to be adjusted for case complexity. This adjustment is done if either the direct vocational costs or duration time is greater than one standard deviation above the statewide average (the adjustment procedure is discussed more fully below). The CACO formula incorporates outcomes through the denominator. If the claimant successfully returns to work, the adjusted costs are divided by 1.5, in effect reducing the CACO score by 33%. If other outcomes are achieved, such as ATW or completion of a plan for a PD referral, no adjustment is made, that is, the other outcomes receive a value of 1.0. If the fee cap is reached, the costs are divided by .75, in effect increasing the CACO score by 33%. Because PD and PI referrals are more costly than EI and AWA referrals, a referral weighting factor is applied to the CACO scores to equalize them. EI and AWA referrals have the CACO score multiplied by .73, while PD and PI referrals have it multiplied by .27. To simplify the final CACO value, the result of this calculation is multiplied by .001.

In this fashion, the CACO formula calculates a score for each referral that summarizes the costs associated with that referral, adjusted for case complexity and further adjusted for selected outcomes (RTW or fee cap). The review examined the CACO formula with regard to the following:

- value of the duration conversion factor
- adjustment for case complexity
- method of incorporating RTW outcome
- valuation of other outcomes
- valuation of the fee cap outcome.
- validity of the overall formula

Conversion Factor: The conversion factor is used to transform duration days to a monetary value. Currently the conversion factor is set at \$43.20, the value of the average daily time loss payment in 1997. Thus, each day the referral is open, \$43.20 cumulates in duration costs. The question considered by the review concerned the appropriateness of the current conversion value. The current average daily time loss payment is approximately \$49. The conversion value currently used thus does not fully account for time loss payments made to claimants during the referral. This undervalues true duration costs incurred by L&I by about

17%. As discussed further in the last section of the report, consideration should be given to updating the conversion factor so that it more accurately reflects current time loss costs.

Adjustment for Case Complexity: Claimants vary in personal characteristics in ways that may affect how they respond to vocational services. Factors such as language ability, age, substance abuse problems, emotional/psychological problems, rural residence and other characteristics may increase referral duration time as well as vocational costs. The CACO formula incorporates a procedure to adjust vocational costs and duration for these factors. If direct vocational costs or duration are more than one standard deviation above the statewide average, the claimant's record is scanned to determine if any of the complexity factors are present. If so, an adjustment to cost or duration is made depending upon the specific complexity factor present and the type of referral. A listing of complexity factors is shown in Table 2.

Table 2: Complexity Factors

Complexity Factor	Intervention Complexity Factors (EI & AWA)		Plan Complexity Factors (PD & PI)	
	Duration	Cost	Duration	Cost
Referral > 180 days	X			
Claimant age > 44	X			
Multiple referrals for claim	X			
Time loss comp > pre-injury wage	X	X	X	X
Chronic pain	X	X	X	X
Psychological/emotional problems	X	X	X	X
English as second language	X	X	X	X
Chemical dependency	X	X	X	x
Rural residence	X	X		
Multiple injury natures	X	X		

As shown, the number of complexity factors varies depending upon the type of referral and whether the potential adjustment applies to duration or cost. Ten complexity factors apply to duration for intervention (EI or AWA) services, 7 apply to cost for intervention services and 5 apply to both duration and cost for plan (PD or PI) services. The magnitude of the adjustment depends upon the number of complexity factors present. The existing number of factors is identified and then is divided by the total number of factors in the relevant referral category to yield a percentage figure. This percentage is then multiplied by the relevant statewide standard deviation figure, and the product becomes the adjustment value. This value is subtracted from the actual duration or cost to obtain an adjusted measure.

For example, consider a claimant referred for EI services whose duration is 140 days. The statewide average for this type of referral is 72 days, and the standard deviation is 47 days. Because 140 days is more than the statewide average plus the standard deviation [$140 > (72 + 47 = 119)$], the claimant's record would be scanned to determine if any complexity factor(s) is present. If one complexity factor were present, an adjustment equal to 10% of the statewide standard deviation value (47 days) would be made. Thus, 4.7 days (10% of 47 days) would be subtracted from 140 days yielding an adjusted duration of 135.3 days. If two complexity factors were present then 20% (2/10) of the standard deviation value (47 days), or 9.4 days, would be subtracted from the actual duration figure (140 days).

Currently, all complexity factors are equally weighted. While simplifying administrative processes, this weighting may not be appropriate because different complexity factors may have differential effects on duration or costs. This review performed a series of statistical analyses, including multiple linear regression, to assess the adequacy of the current method used by CACO to adjust for case complexity. Since some complexity factors, e.g., chemical dependency, occur very infrequently, estimating separate models for different referral types would be problematic. Instead, the regression analysis was performed on pooled data with all observations ($n = 29,794$) combined, but with dummy variables included to control for referral type (claimant gender was also included in the regression model).

Two regression models were estimated, one for duration and the other for vocational costs. Because the data exhibited skewness, logarithmic transformations were performed and the regressions were rerun on the log-transformed models. This transformation changed some of the estimates and significance tests, but the overall pattern of results remained the same. The results from the original (untransformed) regressions are shown here (Table 3 below) because they are easier to interpret and discuss. The results shown reflect the combined effects of the complexity factors across the four types of referrals, but EI and AWA referrals are more heavily weighted because these two types of referrals account for 80% of the observations. Regression coefficients are shown in the table. The coefficients indicate the effect of a given complexity factor on duration or costs controlling for other factors. Whether a given coefficient is statistically significant is indicated by asterisks (see note at the bottom of Table 3). For example, chronic pain has estimated coefficients of 29.3 (duration) and 207.5 (vocational costs). Both of these coefficients are statistically significant and are indicated as such. Thus the average claimant with chronic pain would have an estimated duration 29 days longer than without chronic pain and have \$207 in higher vocational costs.

The complexity factors appear to have widely differing effects on duration and costs. For example, rural residence has almost no effect on duration or costs, whereas chronic pain and psychological problems have a relatively large and statistically significant effect on both duration and vocational costs. Surprisingly, two complexity factors had negative and statistically significant effects, actually decreasing costs or duration: (1) claimant age (- 56.1 for vocational costs), and (2) multiple referrals for claim (- 6.5 and - 133.2 for duration and vocational costs, respectively). The reason for this unexpected finding is unclear. The coefficients in Table 3 can be used to generate predicted values for different combinations of complexity factors. For example, a male claimant referred to EI services having chronic pain and psychological problems, but no other complexity factors would have estimated vocational

costs of \$1,429. If this same claimant had these two factors plus chemical dependency, estimated vocational costs would increase by \$382 to \$1,811. In contrast, if this same claimant lived in a rural area but didn't have chemical dependency, vocational costs would increase only by approximately \$13 to \$1,442. As the data in Table 3 indicate, different complexity factors have differential effects on duration and vocational costs.

Table 3: Results of Regression Analysis to Identify the Effects of Complexity Factors on Duration or Vocational Costs, All Referrals Combined (N = 29,794)

Complexity Factor (% occurrence)	Duration Time	Vocational Costs
	Regression Coefficient	Regression Coefficient
Complexity Factors		
Referral > 180 days (59.4%)	3.5 **	4.2
Claimant age > 44 (40.5%)	0.5	- 56.1
Multiple referrals for claim (17.4%)	- 6.5**	- 133.2 **
Time loss comp > pre-injury wage (1.9%)	7.9**	25.8
Chronic pain (0.1%)	29.3**	207.5**
Psychological/emotional problems (2.1%)	14.3**	93.4**
English as second language (0.3%)	6.0	31.9
Chemical dependency (< .1%)	- 0.6	382.2*
Rural residence (10.5%)	1.7	12.7
Multiple injury nature (2.9%)	- 0.3	- 44.1
Other variables in the model		
AWA dummy variable+	26.1**	394.7**
PD dummy variable	68.3**	1,550.0**
PI dummy variable	101.5**	1,147.0**
Male Claimant	- 0.6	-25.6*
Constant	70.8**	1,154.3**

*P < .05, ** P < .01

+ EI referral is the omitted category.

The analysis presented in Table 3 raises questions about the current procedure used to adjust duration and vocational costs for case complexity. The advantage of the current procedure is its administrative simplicity. The disadvantage is that it does not adequately differentiate among the complexity factors in terms of their effect on duration time or vocational costs.

Return to Work Weight: Return to work (RTW) is a highly desirable goal of L&I, and is incorporated in the CACO formula as discussed earlier in this report. In effect, the CACO score is reduced by one-third if the claimant returns to work by the time the referral is closed. The RTW weight could be increased (or decreased) to place more (or less) emphasis on this outcome. Given the criteria noted earlier (page 6), in particular the desirability of having a performance system reflect the values and priorities of the organization, giving consideration to increasing the RTW weight would seem warranted and fully consistent with current L&I priorities. The magnitude of increase should be decided upon through the customary L&I executive decision making process. However, an increase from the current 1.5 to 2.5 or even 3.0 would seem appropriate. Such a change would have both direct and indirect effects. The direct effect would be to reduce the CACO scores for referrals resulting in RTW. Vocational providers increasing their RTW rates would benefit from a proportionately larger reduction in average CACO score. Increasing the RTW weight would also send an important signal to the vocational provider community about the importance L&I attaches to RTW. This signal may induce desirable behavioral changes on the part of vocational counselors, motivating them to work more effectively to increase RTW rates.

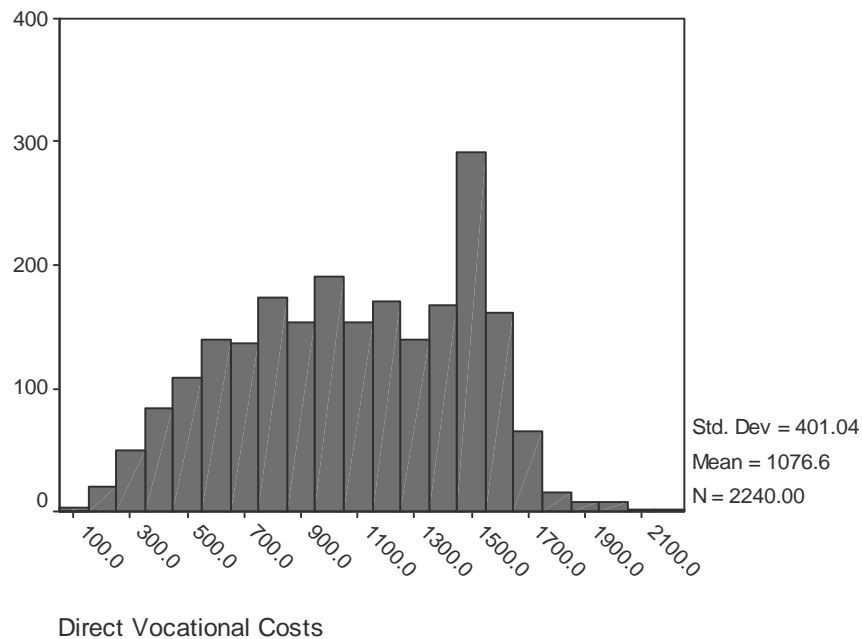
Incorporating Other Outcomes in the CACO Formula: While RTW is the most important outcome, other outcomes, such as able to work (ATW), plan completed (PLN2) and certain services appropriate (SAS) outcomes, are also desirable. The question arises should the CACO formula be modified to incorporate these other outcomes. If so, what weight should they be given? In general, it is desirable for a performance measurement system to be inclusive with regard to targeting incentives for desired outcomes. From this perspective, it would seem desirable to consider expanding the range of outcomes incorporated in the CACO formula. The weight attached to these outcomes should reflect their importance relative to the more desirable RTW outcome. Thus, if the RTW weight is increased from 1.5 to 3.0, the weights for other outcomes might be set at 1.5.

Fee Cap Weight: The current CACO formula increases the CACO score of a referral by one-third if the fee cap is hit. The intent of this is to motivate vocational providers to monitor service delivery so that excessive expenses are not incurred. Increasing the fee cap weight would, in effect, send a stronger signal regarding the importance of delivering vocational services in a cost efficient manner. Decreasing the weight would also be possible but would seem undesirable given the agency's goal to enhance the efficiency of vocational services. On the surface, there seems to be no strong reason for changing the current fee cap weight. In the past, there has been some suggestion that vocational providers "manage" referrals in order to avoid hitting the fee cap by closing the referral just before the cap is hit. As shown in Table 2, only 2% of referrals overall hit the fee cap. It is difficult to know whether this reflects appropriate management of vocational services on the part of providers or undesirable behavior undertaken primarily to avoid having a CACO score increased.

This question was explored in a limited manner by visually examining graphs (histograms) that plotted the direct vocational costs for (1) all referrals and (2) referrals with an outcome of ADM1 (worker medically unstable). If an unexpected number of referrals had vocational costs just below the fee cap, one might take this as evidence of provider behavior directed

toward “managing” referrals so as to avoid the fee cap. There was little evidence of this occurrence for referrals overall. However, for ADM1 outcomes (5,585 or 18.7% of the 29,794 referrals analyzed) the graphs for EI and AWA showed a pattern of costs consistent with the notion of managing referrals to avoid the fee cap. The graph for EI referrals is shown below for the subset of ADM1 outcomes. The current fee cap for EI services is \$1,580. As the graph indicates, there is a sharp spike in the number of cases closed that had vocational costs close to the cap of \$1,580. The data shown in Figure 5 suggest that for referrals with ADM1 outcomes, providers may manage referrals so as to avoid hitting the fee cap. This issue should be examined more closely in the future.

Figure 5: Distribution of Voc Costs



Use of Standard Error of the Mean (SEM) Formula

Another component of the performance measurement system is the standard error of the mean (SEM). This statistical formula provides a method of comparing the average CACO score for each vocational provider to the overall statewide average. If a provider’s average CACO score is greater than the expected score based on the statewide average that provider is designated as having “conditional” status for receiving referrals. Providers whose CACO scores fall within the expected range, based on the statewide CACO average, are certified as “eligible” to receive referrals. Providers with a conditional status can still receive referrals if circumstances and claimant needs dictate. The formula for generating the SEM is shown below.

Provider CACO – Statewide Average CACO

$$\{A\} \times \{B\}$$

where:

{A} = Statewide SD/ square root of “Total Provider Completions” and

{B} = Square root of [(Statewide Completions – Provider Completions)/
(Statewide completions – 1)]

The SEM formula generates a numerical value for each vocational provider for each reporting period. It consists of three components: (1) the numerator, which represents the difference in costs between the provider and the statewide average; (2) component {A} which represents the standard error of the mean; and (3) component {B} which is intended to adjust the standard error to account for differences in provider volume. The original SEM was calculated on the basis of service location, not statewide averages. Because the total number of statewide completions is so much larger than the number of completions for any single provider, the volume adjustment {B} has little effect on the calculation of SEM values and could probably be dropped.

The advantage of the SEM is that it provides a benchmark that allows comparison of individual provider CACO scores with the statewide average. One disadvantage is that the determination of eligibility depends, in part, upon the volume of provider completions. A greater number of provider completions reduces the size of the standard error and thus makes it more likely that, for a given difference in CACO scores, a provider may fall outside the expected range. Two providers having the same CACO score, but substantially different volumes, may have different eligibility determinations, with the provider having the smaller volume seemingly favored.

One method that could address this anomaly would be to use a stratified approach and calculate the SEM within different strata defined according to volume. The simplest approach would be to define two groups according to the median value of referrals. Providers in the lower volume group would be compared to the statewide average for that group using the statewide SD for the group to calculate the SEM value. Providers in the higher volume group would have their SEM values calculated in a similar fashion. This would avoid the current problem of calculating SEM values for providers having widely differing volumes. Alternatively, three groups could be defined representing low, moderate and high volume providers and SEM values for each provider within each group could be calculated. The SEM formula provides a useful method of designating provider eligibility. With minor modification, it could be further improved.

Provider Performance Report

The provider performance report is produced periodically and presents data on provider CACO scores, eligibility designation and other provider outcome-related information for the

reporting period. Organized by service location, the report is posted to the L&I web site and is used to assist claim managers in making vocational referrals. The report is well designed and well organized, and contains much valuable information on provider performance. An important issue concerns the use of the report to make referrals. It appears the report is not fully utilized for making referrals. The goals of the performance measurement system would be better served if the report were used in a more systematic manner to make referrals on the basis of CACO score rankings. The designation of eligible versus conditional, based upon the SEM value, is quite crude and fails to fully utilize the information gathered through the performance system embodied in the CACO score. As discussed in the final section of this report, it is recommended that vocational referrals be made based upon the relative ranking of provider CACO scores. In this way, the likelihood of receiving a referral would be more closely linked to demonstrated effectiveness and efficiency in delivering vocational services. In addition, the CACO data contained in the provider performance report could be used for training purposes directed at continuous quality improvement.

CONCLUSIONS AND RECOMMENDATIONS

L&I's vocational provider performance measurement system is conceptually sound and well designed. Few public or private health care purchasers have attempted to establish performance measurement systems as sophisticated as that developed by L&I, despite the acknowledged importance of doing so. If used to its full advantage, the system can provide a valuable tool to improve the management of vocational services, and thereby improve the effectiveness and efficiency of these services. Critical to this goal is linking demonstrated performance with the referral process. The current approach of designating providers as eligible/conditional for the purpose of making referrals is too crude and fails to fully utilize the potential of the performance measurement system to improve provider accountability and to create incentives directed at improving outcomes and managing costs. Further, the performance measurement system could play an important role in training providers and in continuous quality improvement activities if the data generated by the system were used for this purpose.

Outlined below are recommendations for improving the operation of the performance measurement system in order of priority. Tradeoffs that may arise in considering these recommendations are also highlighted.

Recommendations for Modifying the Performance Measurement System

1. **Ensure that vocational referrals are more closely aligned with demonstrated provider performance, based upon rankings of CACO scores.** It is recommended that L&I maintain the current procedure of using the SEM to designate eligible providers. However, within a service location referrals to eligible providers should be made on the basis of rankings of CACO scores. It would not seem desirable to make referrals to individual providers strictly on the basis of the rank order of CACO scores, as this may have the unintended consequence of promoting unhealthy competition among providers. This problem could be avoided by defining groups of providers within a service location based upon CACO score, e.g., groups based upon quartiles of the CACO score distribution, and using these groups to establish priorities for

referrals. This would not necessarily mean that all referrals within a service location would go to the provider groups with the highest ranking. Rather, the group rankings could be used to establish priorities for referrals, which in effect would more closely link demonstrated performance, as measured by CACO scores, to referral volume. Possible tradeoffs of this recommendation may be the need for closer L&I management oversight of the referral process and the need for internal and external stakeholder discussion.

2. **Increase the weight of RTW outcome in the CACO calculation.** Return to work is clearly the most desirable outcome of vocational rehabilitation services. This outcome is receiving increased attention by L&I's executive management team and is viewed as an important priority of the agency. The 1998 JLARC Report also emphasized the importance of return to work as an outcome of vocational rehabilitation. Given the priority attached to return to work, increasing the weight of this outcome in the CACO formula is recommended. By increasing the weight of RTW, L&I would send a clear signal to the vocational rehabilitation community regarding the importance it attaches to this outcome. It would seem appropriate to increase the weight of RTW to 2.5 or even 3.0.
3. **Modify case complexity adjustment procedure to more accurately reflect the effects of different complexity factors.** The current CACO formula uses equal weighting to adjust for case complexity. Based upon the analysis presented in this report, this approach does not seem to adequately distinguish differences in the impact of the complexity factors. Complexity factors appear to have widely differing effects on duration and vocational costs, and two factors even had negative effects. The most important factors contributing to increased duration or costs were chronic pain, psychological problems and chemical dependency. L&I should review the method used to adjust for case complexity and modify it to more accurately reflect the effects of different factors.
4. **Increase the weight of the CACO conversion factor.** Performance measurement systems should to the extent possible reflect actual resource consumption in order to provide valid information about the cost-effectiveness of the services delivered. The current CACO formula uses a conversion factor (\$43.20) based upon the 1997 time loss payment rate. The conversion factor should be increased to more accurately reflect the updated average time loss payment rate of \$49. Further, it would be advisable to update the conversion factor on an annual basis so that it reflects actual costs incurred by L&I.
5. **Incorporate other desirable outcomes (weighted appropriately) in the CACO calculation.** The current CACO formula incorporates RTW but not other outcomes that have recognized value in terms of vocational rehabilitation. It is recommended that other outcomes, such as able to work (ATW) or plan approved (PLN2), be incorporated in the CACO formula to expand the inclusiveness of the measurement system. The weights attached to these outcomes should reflect their relative

importance. The tradeoff associated with this recommendation may be the addition of some complexity to the CACO formula and the possible need for provider training.

6. **Use CACO data for continuous quality improvement activities to enhance the skills of vocational providers.** Because CACO scores capture information concerning the relative performance of individual providers, as well as the aggregate performance of service locations, CACO data represent a valuable potential resource for planning and implementing continuous quality improvement activities for vocational providers. This aspect of the performance system appears to be greatly underutilized. Using CACO data for quality improvement purposes in a collaborative fashion may have the added benefit of improving provider support for the performance measurement system. Individual providers who demonstrate records of excellence or substantial improvement in performance, or selected service locations that do the same on an area basis, should be identified and utilized for quality improvement and training purposes.
7. **Modify the SEM for designating provider eligibility.** Consideration should be given to modifying the SEM to better account for differences in provider volume. The volume adjustment procedure, developed for a former version of the SEM that used service location data rather than statewide data, makes little difference in the calculation of the SEM value, although it does not introduce any specific technical problems in the calculation. More important, the SEM produces results that in some cases may favor providers with lower volumes, as discussed previously. Currently, it is possible (though it appears to happen infrequently) for two providers with similar CACO scores to be given different referral designations, one eligible the other conditional, if their referral volumes differ substantially. The number of referral completions directly affects the size of the standard error, and hence the ultimate value of the SEM. Larger referral volumes lead to smaller standard errors and increase the probability that for a given difference in CACO score (provider CACO score – statewide average CACO score) a provider may have a SEM value above the statistical threshold value (t-statistic). This problem could be addressed by stratifying providers according to volume (e.g., below median and above median) and computing SEM values for each group separately. In this way, large differences in provider volume would be eliminated.